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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,558	02/23/2004	Yukihisa Takeuchi	791_200 CON	8665
25191	7590	08/03/2004	EXAMINER	
BURR & BROWN PO BOX 7068 SYRACUSE, NY 13261-7068			HA, NGUYEN T	
			ART UNIT	PAPER NUMBER
			2831	

DATE MAILED: 08/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/784,558

Applicant(s)

TAKEUCHI ET AL.

Examiner

Nguyen T Ha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-20 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-15 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 0204.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-7 and 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naito et al. (US 6,549,395) in view of Dohya (US 4,665,468).

Regarding claim 1, Naito et al. disclose a multi-layer capacitor/intermediate laminated structure comprising: a plurality of unfired ceramic plates/ceramic green sheet 32 stacked along a laminating direction (figure 2a), each of said plates having a plurality of holes (38 & 39) formed therethrough, wherein at least a first hole in one of said plurality of unfired ceramic plates has the same shape and cross-sectional area as respective first holes in the remaining plurality of unfired ceramic plates (figure 1) such

that said first holes define a cylinder of constant cross-sectional area throughout the entire thickness of said intermediate laminated structure (figure 2a).

Naito et al. disclose all the claimed limitations above, except for the holes formed therethrough by a punching operation.

**Dohya teaches** through holes being punched (column 6, lines 59-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the Dohya punching holes in the Naito in order to make an easy assembly for the ceramic layer.

Regarding claim 2, Naito et al disclose each of said plurality of holes in said one of said plurality of unfired ceramic plates has the same shape and cross-sectional area as respective holes in the remaining plurality of unfired ceramic plates (figure 1) such that said holes define a plurality of cylinders of constant cross sectional area throughout the entire thickness of said intermediate laminated structure (figure 2a).

Regarding claims 3 & 4, the teaching of Naito et al. and Dohya includes all the claimed limitations with respect to claim 2 above, except for a ratio of an axial length of each said cylinder to a diameter of said cylinder, or a ratio of an axial length of said cylinder to a minimum distance between opposing edges on an opening surface of said cylinder, is in a range of about 1: 1 to about 15:1 or a ratio of an axial length of each said cylinder to a space between said cylinder and adjacent cylinders is in a range of about 1: 1 to about 15:1.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a ratio of an axial length of said cylinder to a minimum

distance between opposing edges on an opening surface of said cylinder, is in a range of about 1: 1 to about 15:1 or a ratio of an axial length of each said cylinder to a space between said cylinder and adjacent cylinders is in a range of about 1: 1 to about 15:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. ***In re Aller, 105 USPQ 233.***

Regarding claims 5 & 6, the teaching of Naito et al. and Dohya includes all the claimed limitations with respect to claim 2 above, except for a diameter of each said cylinder, or a minimum distance between opposing edges on an opening surface of each said cylinder, is less than or equal to 100 gm or a space between adjacent cylinders being less than or equal to 100 gm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a diameter of each said cylinder, or a minimum distance between opposing edges on an opening surface of each said cylinder, is less than or equal to 100 gm or space between adjacent cylinders being less than or equal to 100 gm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. ***In re Aller, 105 USPQ 233.***

Regarding claim 7, Naito et al. disclose unfired ceramic plates/dielectric ceramic comprising ceramic material (column 5, lines 26-28).

Regarding claims 9 & 10, Naito et al. disclose a multi-layer capacitor/intermediate laminated structure comprising: a plurality of unfired ceramic plates/ceramic green sheet

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32 stacked along a laminating direction (figure 2a), each of said plates having a plurality of holes (38 & 39) formed therethrough, wherein at least a first hole in one of said plurality of unfired ceramic plates has the same shape and cross-sectional area as respective first holes in the remaining plurality of unfired ceramic plates (figure 1) such that said first holes define a cylinder of constant cross-sectional area throughout the entire thickness of said intermediate laminated structure (figure 2a).

Naito et al. disclose all the claimed limitations above, except for the holes formed therethrough by a punching operation.

Dohya teaches through holes being punched (column 6, lines 59-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the Dohya punching holes in the Naito in order to make an easy assembly for the ceramic layer.

Regarding claims 11 & 12, Naito et al. disclose a multi-layer capacitor (figures 1-2) comprising:

- a plurality of insulators (32) comprising unfired ceramic plates; and
- a plurality of conductors (33 & 34) formed on said insulators; and
- at least one cylinder/flowing through connection portion (40) defined by a plurality of first holes (38 & 39) formed in each of said insulators and conductors by passing through all of said insulators and conductors (figure 2), wherein at least a first hole in one of said plurality of insulators and conductors has the same shape and cross-sectional area as respective first holes in the remaining plurality of insulators and

conductors (figure 2) such that said cylinder has a constant cross-sectional area throughout the entire thickness of said intermediate laminated circuit substrate.

Naito et al. disclose all the claimed limitations above, except for the holes formed therethrough by a punching operation.

**Dohya teaches** through holes being punched (column 6, lines 59-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the Dohya punching holes in the Naito in order to make an easy assembly for the ceramic layer.

Regarding claims 13 & 14, the teaching of Naito et al. and Dohya includes all the claimed limitations with respect to claim 12 above, except for a ratio of an axial length of each said cylinder to a diameter of said cylinder, or a ratio of an axial length of said cylinder to a minimum distance between opposing edges on an opening surface of said cylinder, is in a range of about 1: 1 to about 15:1 **or** a ratio of an axial length of each said cylinder to a space between said cylinder and adjacent cylinders is in a range of about 1: 1 to about 15:1.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a ratio of an axial length of said cylinder to a minimum distance between opposing edges on an opening surface of said cylinder, is in a range of about 1: 1 to about 15:1 **or** a ratio of an axial length of each said cylinder to a space between said cylinder and adjacent cylinders is in a range of about 1: 1 to about 15:1, since it has been held that where the general conditions of a claim are disclosed in the

prior art, discovering the optimum or workable ranges involves only routine skill in the art. ***In re Aller, 105 USPQ 233.***

Regarding claim 15, Naito et al. disclose a multi-layer capacitor (figures 1-2) comprising: a plurality of conductors (33 & 34), a plurality of insulators (32) for insulating said conductors stacked together with said conductors, said insulators comprising unfired ceramic plates, and at least one cylinder defined by a plurality of first holes formed in each of said insulators and conductors (figure 2), wherein at least a first hole in one of said plurality of insulators and conductors has the same shape and cross-sectional area as respective first holes in the remaining plurality of said insulators and conductors (figure 2) such that said cylinder has a constant cross-sectional area throughout the entire thickness of said intermediate laminated circuit substrate.

Naito et al. disclose all the claimed limitations above, except for the holes formed therethrough by a punching operation.

**Dohya teaches** through holes being punched (column 6, lines 59-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the Dohya punching holes in the Naito in order to make an easy assembly for the ceramic layer.

***Allowable Subject Matter***

3. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



With respect to claim 8, the prior art alone or in combination does not teach the limitation of the unfired ceramic plates have a Young's module of 3000 kgf/mm<sup>2</sup> or less and a tensile strength of 20 kgf/mm<sup>2</sup> mm or less.

4. Claims 16-20 are allowed.

The following is an examiner's statement of reasons for allowance:

With respect to claims 16-20, the prior art alone or in combination does not teach the limitation of an intermediate laminated circuit substrate comprising: at least one build-up layer formed on at least one side of said base substrate, said build-up layer comprising at least one conducting layer and at least one insulating layer alternately stacked together with said conducting layer.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T Ha whose telephone number is 571-272-1974. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-2800 ext. 31. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**Nguyen T. Ha**  
**July 23, 2004**

 7/30/04  
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